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GASTRIC CANCER

Clinical profile of gastric cancer in Khuzestan, southwest of Iran

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Abstract

AIM: To analyze the characteristics of epidemiological, clinical and survival patterns among patients with carcinoma of the stomach.

METHODS: We retrospectively studied the characteristics of 186 gastric adenocarcinoma patients at Ahwaz Jundishapur University Hospitals (AJSUH) from September 1, 1996 to September 1, 2002. All the patients had histopathologically-confirmed malignancy. Demographic variables, family history of gastric cancer (GC), clinicopathologic characteristics and treatment-related variables were analyzed. Univariate analysis was performed with the log-rank test and multivariate analysis with Cox regression. $P < 0.05$ was considered statistically significant.

RESULTS: Male to female ratio was 2.6:1. The mean age was 60.6 years and 14% of the patients were younger than 40 years. Adenocarcinoma, gastric lymphoma, and gastric metastasis were found in 94.5%, 2.3%, and 3% patients, respectively. There was an average of 6-mo delay between the initial symptoms and the diagnosis. Among adenocarcinoma groups, intestinal type was the commonest (55.9%) and the distal third was the most common localization (88.4%). One hundred and thirty-four patients (72.1%) were males. Thirty-one patients (17%) had a family history of GC. Surgery was performed in 90% of patients (non-curative).

CONCLUSION: The epidemiological features of GC in south Iran mimic those in high-risk areas. There is a higher frequency of GC in young patients at our institution. Patients are detected and treated after a relatively long delay. Most patients present in advanced stages, which favors a poor overall survival. Family history of GC has a significant problem in our area. Studying the etiology of this cancer in south Iran and earlier diagnosis and subsequent better cares are recommended.

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Key words: Gastric cancer; Epidemiological features; Khuzestan; Southwest of Iran

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INTRODUCTION

Gastric cancer (GC) remains the third most common malignancy in the world[1]. The pattern and incidence of GC vary widely in different parts of the world. Costa Rica and Japan have the first and second highest rates in the world with a rate of 77.5 and 50.5/100 000 persons, respectively[2,3]. Gastric cancer is the most common malignancy in Iran and its incidence is particularly high in the Ardabil Province in the northwest of the country. In this province, the age standard incidence rate is 49.1 and 25.4/100 000 persons per year in males and females, respectively. The cause of the high incidence of GC in this geographical region is unknown[4,5].

The epidemiology of GC has been widely studied in the Western world as well as in Japan[6-9]. However, only few scattered reports from the developing world have been published[10-14]. There is a lack of good descriptive data on GC from the Middle East countries, where both cancer registration and prevalence of risk factors are relatively unknown. Because of the decreasing trend taking place in the Western world as a result of possibly socio-economic development and its consequences, it is important to gain an insight into what is happening in other parts of the world such as in the Middle East. This prompted us to report the epidemiological and clinicopathological features of gastric malignancy in Khuzestan, southwest of Iran in comparison to other countries whenever possible. This

could assist in the better understanding of the important risk factors, which contribute to the development of GC. This also gives a clue about whether or not screening programs are needed in our region.

MATERIALS AND METHODS

We retrospectively analyzed the clinicopathologic characteristics of 186 gastric adenocarcinoma patients who were admitted to or operated upon at Ahwaz Jundishapur University Hospitals (AJSUH) from September 1, 1996 to September 1, 2002. Age, sex, method of operation, size of lesion, location of cancer in the stomach and stage were analyzed in patients, retrospectively. Histologically confirmed primary gastric malignancy was found in 186 patients, including 177 patients with adenocarcinoma, 5 patients with primary gastric lymphoma (PGL), and 3 patients with malignant gastric metastasis. All available endoscopy reports were reviewed. At the entry, clinical symptoms, demographic data and medical history were recorded and gastroscopy was performed to establish the endoscopic diagnosis and status of *H pylori* infection. During the examination of biopsy specimens from the stomach, silver or modified Giemsa staining and histological examinations were performed to establish the diagnosis and status of *H pylori* infection.

Patients and/or family members were contacted. Gastric adenocarcinoma was classified into intestinal type (IT), diffuse type (DT) or mixed type according to the histological criteria of Lauren[15]. Tumor staging in each patient was based on clinical information, preoperative radiological investigations, operative findings and pathological examination. The staging was made in accordance with the TNM system[16].

Clinicopathologic data were compared using the χ^2 and Fisher's exact tests. $P < 0.05$ was considered statistically significant.

RESULTS

During the study period, 186 patients with GC were identified, 127 (68.3%) patients were males with a male to female ratio of 2.6:1. The peak incidence was in the age group of 60-69 years (40%), followed by the age group of 50-59 years (16%). Approximately 14% of the patients were younger than 40 years and 6% of the patients were younger than 30 years. The mean age for the whole group was 63 years (range 21-91 years). Table 1 shows the age distribution in the patient groups.

Features of the patients are summarized in Table 2. There was an average of 6-mo delay (range 1-13 mo) between the initial symptoms and diagnosis.

Carcinomas were located most frequently in the lower third of the stomach, accounting for 88.5% (165/186) of all patients. Table 3 shows the distribution of various histological types of gastric adenocarcinoma according to the sites that were affected. One hundred (53.5%) and eighty-six (46.5%) patients lived in urban and rural areas, respectively. The histopathology of gastric biopsy showed *H pylori*-associated chronic active gastritis in 166 (88.9%) patients.

Table 1 Age distribution in patient groups

Age (yr) group	Male patients (*n*)	%	Female patients (*n*)	%
1-10	0	0	0	0
10-19	0	0	0	0
20-29	4	2.15	7	3.76
30-39	15	8	7	3.76
40-49	11	6	6	3.2
50-59	20	11	10	5.4
60-69	50	27	24	12.9
70-79	19	10	6	3.2
⩾ 80	7	3.7	0	0
Total	126	67.9	60	32

Table 2 Features of the studied patients

Signs and symptoms	Patients (*n*)	%
Abdominal pain	93	50
Weight loss	23	12
Dyspepsia	91	48.8
Nausea, vomiting	74	40
Abdominal mass	4	2
Anorexia	182	97.7
Dysphagia	30	16
Gastrointestinal bleeding	26	14
Ascites	28	15
Constipation	5	2.5

Table 3 Distribution of gastric adenocarcinomas according to their site *n* (%)

Histopathological type	GEJ and gastric cardia	Gastric corpus and antrum	Total
Intestinal type adenocarcinoma	24 (12.9)	80 (43.1)	104
Diffuse type adenocarcinoma	14 (7.5)	60 (32.3)	74
Gastric lymphoma and metastasis	0 (0)	8 (4.3)	8
Total	38 (16.7)	148 (79.9)	186

GOJ: Gastro-esophageal junction.

According to TNM staging, the proportions of stages ⅠA, Ⅰ, Ⅱ + Ⅲ, and Ⅳ in the studied groups were 0% (0/186), 28% (53/186), and 71% (133/186), respectively (Table 4).

DISCUSSION

Gastric cancer is the most prevalent malignancy in Iran. If GC is diagnosed at an early stage, patients can have a highly favorable prognosis and avoid extended surgery, which may produce complications, especially in the elderly people. However, the symptoms of GC are non-specific and vague, when symptomatic patients experience epigastric pain and discomfort and definitive symptoms such as weight loss or obstructive symptoms and metastases that often impede curative radical resection. Additionally, the results of GC treatment do not differ

Table 4 TNM stage and methods of operation in patient groups

Stage (TNM) and methods of operation	Patients (*n*)	%
Ⅰ	0	10
Ⅱ	20	10.8
Ⅲ	33	17.5
Ⅳ	133	71
Curability		
Curative resection	15	8
Palliative resection	95	51
No resection	76	41
Type of resection		
Total and subtotal gastrectomy	70	37.6
Distal gastrectomy	14	7.5
Other resections and palliative operation	26	14

markedly from the past results though there are improved surgical techniques and adjuvant treatments. Researchers have shown that the prognosis of GC has not changed in the past 20 years[9,17]. The only method that is likely to improve the survival rates is early detection of GC. Our patients tended to present late as evidenced by the fact that there was a long interval between the onset of symptoms and presentation. There was an average of 6-mo delay (range 1-13 mo) between the initial symptoms and the diagnosis.

This is not due to the insufficient current endoscopic services, but due to the fact that many people in our area who have dyspeptic symptoms visit non-specialist physicians who either prescribe medications for long term treatment or use drugs in order to ameliorate the pain. Subsequently, some of these patients whose cause of dyspepsia is cancer present with late stage GC or one of its complications. In addition, the elderly people usually fail to make use of the available medical services. However, general practitioners should be more liberal in referring patients for endoscopy and resist the temptation to treat dyspeptic patients with anti-ulcer therapy without endoscopy, especially in elderly people and in patients with alarming signs. Open access endoscopy, greater efforts in patients' education and improvement of the diagnostic technical skills may improve the early detection of GC.

According to TNM staging, the proportions of stages ⅠA, Ⅰ, Ⅱ+Ⅲ, and Ⅳ in the studied groups were 0% (0/186), 28% (53/186), and 71% (133/186), respectively. Approximately more than two-thirds of the patients were diagnosed with advanced GC.

These results re-emphasize that GC symptoms are non-specific and need an early screening examination. A public screening system for gastric cancer has not yet been introduced in Iran and in our area.

Gastric cancer is the most common malignancy in Iran and its incidence is particularly high in the Ardabil Province in the northwest of the country[12,13,18]. In this province, the age standard incidence rate is 49.1 and 25.4/100 000 persons per year in males and females, respectively.

The cause of the high incidence of gastric cancer in our country is unknown.

The following two factors may play a role. First, the rapid change in dietary habits constitutes a risk factor. Vitamin C-rich fresh vegetables and fruits, starch and natural unprocessed wheat products are the major constituents of Iranian food. However, canned food, hot spices, pickles and animal proteins are now dominating the Iranian menu.

Fermentation of foods involves the production of nitrosamine. This compound has been implicated as a risk factor for GC in many studies and frequent consumption of fermented food may be a risk factor for GC in our region because our people use such compounds most often.

However, to further investigate the association between fermentation and GC, more comprehensive and detailed data are required. Salt has been indicated as a risk factor for GC in many previous studies. Since the use of salt and fermentation in our regional food preparations is strongly inter-related, we are unable to clearly separate the independent effects of the two variables.

It is known that the environmental risk factors for GC are dietary in origin[19,20].

In our region the incidence of *H pylori* infection (> 80%) is high and there is a substantial incidence of reflux disease. In addition, 30% people smoke, < 5% people drink alcohol and 60% people have a body mass index > 25[21].

Most resections are done with palliative intent. The low rate of gastrectomy with "curative" intent could be explained by the high proportion of patients with advanced GC at presentation.

Patterns of GC in our area are similar to those reported from high-risk regions worldwide[22]. In our study, the male to female ratio was 2.6:1, the peak incidence was in the age group of 60-69 years (40%), followed by the age group of 50-59 years (16%). Approximately 14% of the patients were younger than 40 years and 6% of the patients were younger than 30 years. The mean age of the whole group was 63 years (range 21-91 years). Among our study groups intestinal type (IT) adenocarcinoma was the commonest histological subtype (56%).

IT adenocarcinoma was more common than DT adenoma (1.65: 1) and distal location was more frequent than the proximal one (4.77:1) (Table 1).

In Western countries, PGL and metastasis are represented only in 2%-5% of gastric malignancies[23]. It was 4.3% in our series, which was lower than 9% from neighboring Iraq[24], and 14%-22% from Saudi Arabia[11,25]. During the past three decades the site of PGL in the Middle East has changed. Small intestinal involvement has become less common and gastric involvement more frequent. This varying pattern seems to be environmental in origin. The ratio of PGL to gastric adenocarcinoma among our patients was 0.045, which is similar to the western series[26].

In conclusion, several symptoms of GC are non-specific. The majority of identified gastric adenocarcinoma patients are symptomatic, and have a lesser chance of being cured by operation and a lower survival rate. The patients with dyspeptic symptoms and alarming signs should be referred to earlier diagnostic endoscopy. Improvements in diet and food storage and control of *H pylori* infection, by indirect means such as improving the

general sanitary conditions or by direct interventions such as eradication are likely to offer great potentials for the prevention of GC in this area.

Although this study has highlighted the pertinent epide-miological and clinicopathological features of gastric malignancy in Khuzestan Province in Iran, further studies are needed to evaluate the environmental risk factors, incidence, the treatment outcomes and survival rate.

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